



## RAW SEQUENCE LISTING ERROR REPORT

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 10/656,093  
Source: OJAE  
Date Processed by STIC: 9-16-03

**THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.**

**PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:**

- 1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,
- 2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY

FOR CRF SUBMISSION AND PATENTIN SOFTWARE QUESTIONS, PLEASE CONTACT MARK SPENCER, 703-308-4212.

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE CHECKER VERSION 4.0 PROGRAM, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW FOR ADDRESS:

<http://www.uspto.gov/web/offices/pac/checker>

Applicants submitting genetic sequence information electronically on diskette or CD-Rom should be aware that there is a possibility that the disk/CD-Rom may have been affected by treatment given to all incoming mail.

Please consider using alternate methods of submission for the disk/CD-Rom or replacement disk/CD-Rom.

Any reply including a sequence listing in electronic form should NOT be sent to the 20231 zip code address for the United States Patent and Trademark Office, and instead should be sent via the following to the indicated addresses:

1. EFS-Bio (<<http://www.uspto.gov/ebe/efs/downloads/documents.htm>> , EFS Submission User Manual - ePAVE)
2. U.S. Postal Service: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
3. Hand Carry directly to:  
U.S. Patent and Trademark Office, Technology Center 1600, Reception Area, 7<sup>th</sup> Floor, Examiner Name,  
Sequence Information, Crystal Mall One, 1911 South Clark Street, Arlington, VA 22202  
Or  
U.S. Patent and Trademark Office, Box Sequence, Customer Window, Lobby, Room 1B03, Crystal Plaza Two,  
2011 South Clark Place, Arlington, VA 22202
4. Federal Express, United Parcel Service, or other delivery service to: U.S. Patent and Trademark Office,  
Box Sequence, Room 1B03-Mallroom, Crystal Plaza Two, 2011 South Clark Place, Arlington, VA 22202

Revised 04/24/2003

## Raw Sequence Listing Error Summary

<u>ERROR DETECTED</u>	<u>SUGGESTED CORRECTION</u>	<u>SERIAL NUMBER</u>
ATTN: NEW RULES CASES: PLEASE DISREGARD ENGLISH "ALPHA" HEADERS, WHICH WERE INSERTED BY PTO SOFTWARE		
1 <u>Wrapped Nucleics</u> <u>Wrapped Aminos</u>	The number/text at the end of each line "wrapped" down to the next line. This may occur if your file was retrieved in a word processor after creating it. Please adjust your right margin to .3; this will prevent "wrapping."	10/656,093
2 <u>Invalid Line Length</u>	The rules require that a line not exceed 72 characters in length. This includes white spaces.	
3 <u>Misaligned Amino</u> <u>Numbering</u>	The numbering under each 5 <sup>th</sup> amino acid is misaligned. Do not use tab codes between numbers; use space characters, instead.	
4 <u>Non-ASCII</u>	The submitted file was not saved in ASCII(DOS) text, as required by the Sequence Rules. Please ensure your subsequent submission is saved in ASCII text.	
5 <u>Variable Length</u>	Sequence(s) contain n's or Xaa's representing more than one residue. Per Sequence Rules, each n or Xaa can only represent a single residue. Please present the maximum number of each residue having variable length and indicate in the <220>-<223> section that some may be missing.	
6 <u>PatentIn 2.0</u> <u>"bug"</u>	A "bug" in PatentIn version 2.0 has caused the <220>-<223> section to be missing from amino acid sequences(s). Normally, PatentIn would automatically generate this section from the previously coded nucleic acid sequence. Please manually copy the relevant <220>-<223> section to the subsequent amino acid sequence. This applies to the mandatory <220>-<223> sections for Artificial or Unknown sequences.	
7 <u>Skipped Sequences</u> <u>(OLD RULES)</u>	Sequence(s) missing. If intentional, please insert the following lines for each skipped sequence: (2) INFORMATION FOR SEQ ID NO:X: (insert SEQ ID NO where "X" is shown) (i) SEQUENCE CHARACTERISTICS: (Do not insert any subheadings under this heading) (xi) SEQUENCE DESCRIPTION:SEQ ID NO:X: (insert SEQ ID NO where "X" is shown) This sequence is intentionally skipped  Please also adjust the "(ii) NUMBER OF SEQUENCES:" response to include the skipped sequences.	
8 <u>Skipped Sequences</u> <u>(NEW RULES)</u>	Sequence(s) missing. If intentional, please insert the following lines for each skipped sequence. <210> sequence id number <400> sequence id number 000	
9 <u>Use of n's or Xaa's</u> <u>(NEW RULES)</u>	Use of n's and/or Xaa's have been detected in the Sequence Listing. Per 1.823 of Sequence Rules, use of <220>-<223> is MANDATORY if n's or Xaa's are present. In <220> to <223> section, please explain location of n or Xaa, and which residue n or Xaa represents.	
10 <u>Invalid &lt;213&gt;</u> <u>Response</u>	Per 1.823 of Sequence Rules, the only valid <213> responses are: Unknown, Artificial Sequence, or scientific name (Genus/species). <220>-<223> section is required when <213> response is Unknown or is Artificial Sequence	
11 <u>Use of &lt;220&gt;</u>	Sequence(s) missing the <220> "Feature" and associated numeric identifiers and responses. Use of <220> to <223> is MANDATORY if <213> "Organism" response is "Artificial Sequence" or "Unknown." Please explain source of genetic material in <220> to <223> section. (See "Federal Register," 07/01/1998, Vol. 63, No. 104, pp. 29631-32) (Sec. 1.823 of Sequence Rules)	
12 <u>PatentIn 2.0</u> <u>"bug"</u>	Please do not use "Copy to Disk" function of PatentIn version 2.0. This causes a corrupted file, resulting in missing mandatory numeric identifiers and responses (as indicated on raw sequence listing). Instead, please use "File Manager" or any other manual means to copy file to floppy disk.	
13 <u>Misuse of n/Xaa</u>	"n" can only represent a single <u>nucleotide</u> ; "Xaa" can only represent a single <u>amino acid</u>	



OIPF

RAW SEQUENCE LISTING  
PATENT APPLICATION: US/10/656,093

DATE: 09/16/2003  
TIME: 10:48:00

Input Set : A:\256-152div.txt  
Output Set: N:\CRF4\09162003\J656093.raw

3 <110> APPLICANT: YOUNG, ANDREW A.  
4 VINE, WILL  
5 BEELEY, NIGEL R.A.  
6 PRICKETT, KATHRYN S.  
8 <120> TITLE OF INVENTION: INOTROPIC AND DIURETIC EFFECTS OF GLP-1 AND GLP-1 AGONISTS  
10 <130> FILE REFERENCE: 256-152DIV US  
C--> 12 <140> CURRENT APPLICATION NUMBER: US/10/656,093  
C--> 13 <141> CURRENT FILING DATE: 2003-09-05  
15 <160> NUMBER OF SEQ ID NOS: 75  
17 <170> SOFTWARE: PatentIn Ver. 2.1  
19 <210> SEQ ID NO: 1  
20 <211> LENGTH: 39  
21 <212> TYPE: PRT  
22 <213> ORGANISM: Heloderma horridum  
24 <220> FEATURE:  
25 <223> OTHER INFORMATION: Exendin-3  
27 <400> SEQUENCE: 1  
28 His Ser Asp Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
29 1 5 10 15  
31 Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
32 20 25 30  
34 Ser Gly Ala Pro Pro Pro Ser  
35 35  
38 <210> SEQ ID NO: 2  
39 <211> LENGTH: 39  
40 <212> TYPE: PRT  
41 <213> ORGANISM: Heloderma suspectum  
43 <220> FEATURE:  
44 <223> OTHER INFORMATION: Exendin-4  
46 <400> SEQUENCE: 2  
47 His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
48 1 5 10 15  
50 Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
51 20 25 30  
53 Ser Gly Ala Pro Pro Pro Ser  
54 35  
57 <210> SEQ ID NO: 3  
58 <211> LENGTH: 30  
59 <212> TYPE: PRT  
60 <213> ORGANISM: Homo sapiens  
62 <220> FEATURE:  
63 <223> OTHER INFORMATION: GLP-1  
65 <400> SEQUENCE: 3

Does Not Comply  
Corrected Diskette Needed

P. 4, 6

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/656,093

DATE: 09/16/2003

TIME: 10:48:00

Input Set : A:\256-152div.txt

Output Set: N:\CRF4\09162003\J656093.raw

```

66 His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
67   1           5           10           15
69 Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg
70           20           25           30
73 <210> SEQ ID NO: 4
74 <211> LENGTH: 39
75 <212> TYPE: PRT
76 <213> ORGANISM: Artificial Sequence
78 <220> FEATURE:
79 <223> OTHER INFORMATION: Description of Artificial Sequence: Exendin or
80   exendin agonist
82 <220> FEATURE:
83 <221> NAME/KEY: MOD_RES
84 <222> LOCATION: (1)
85 <223> OTHER INFORMATION: His, Arg or Tyr
87 <220> FEATURE:
88 <221> NAME/KEY: MOD_RES
89 <222> LOCATION: (2)
90 <223> OTHER INFORMATION: Ser, Gly, Ala or Thr
92 <220> FEATURE:
93 <221> NAME/KEY: MOD_RES
94 <222> LOCATION: (3)
95 <223> OTHER INFORMATION: Asp or Glu
97 <220> FEATURE:
98 <221> NAME/KEY: MOD_RES
99 <222> LOCATION: (5)
100 <223> OTHER INFORMATION: Ala or Thr
102 <220> FEATURE:
103 <221> NAME/KEY: MOD_RES
104 <222> LOCATION: (6)
105 <223> OTHER INFORMATION: Ala, Phe, Tyr or naphthylalanine
107 <220> FEATURE:
108 <221> NAME/KEY: MOD_RES
109 <222> LOCATION: (7)
110 <223> OTHER INFORMATION: Thr or Ser
112 <220> FEATURE:
113 <221> NAME/KEY: MOD_RES
114 <222> LOCATION: (8)
115 <223> OTHER INFORMATION: Ala, Ser or Thr
117 <220> FEATURE:
118 <221> NAME/KEY: MOD_RES
119 <222> LOCATION: (9)
120 <223> OTHER INFORMATION: Asp or Glu
122 <220> FEATURE:
123 <221> NAME/KEY: MOD_RES
124 <222> LOCATION: (10)
125 <223> OTHER INFORMATION: Ala, Leu, Ile, Val, pentylglycine or Met
127 <220> FEATURE:
128 <221> NAME/KEY: MOD_RES

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/656,093

DATE: 09/16/2003

TIME: 10:48:00

Input Set : A:\256-152div.txt

Output S t: N:\CRF4\09162003\J656093.raw

129 <222> LOCATION: (11)  
130 <223> OTHER INFORMATION: Ala or Ser  
132 <220> FEATURE:  
133 <221> NAME/KEY: MOD\_RES  
134 <222> LOCATION: (12)  
135 <223> OTHER INFORMATION: Ala or Lys  
137 <220> FEATURE:  
138 <221> NAME/KEY: MOD\_RES  
139 <222> LOCATION: (13)  
140 <223> OTHER INFORMATION: Ala or Gln  
142 <220> FEATURE:  
143 <221> NAME/KEY: MOD\_RES  
144 <222> LOCATION: (14)  
145 <223> OTHER INFORMATION: Ala, Leu, Ile, pentylglycine, Val or Met  
147 <220> FEATURE:  
148 <221> NAME/KEY: MOD\_RES  
149 <222> LOCATION: (15)...(17)  
150 <223> OTHER INFORMATION: Ala or Glu  
152 <220> FEATURE:  
153 <221> NAME/KEY: MOD\_RES  
154 <222> LOCATION: (19)  
155 <223> OTHER INFORMATION: Ala or Val  
157 <220> FEATURE:  
158 <221> NAME/KEY: MOD\_RES  
159 <222> LOCATION: (20)  
160 <223> OTHER INFORMATION: Ala or Arg  
162 <220> FEATURE:  
163 <221> NAME/KEY: MOD\_RES  
164 <222> LOCATION: (21)  
165 <223> OTHER INFORMATION: Ala or Leu  
167 <220> FEATURE:  
168 <221> NAME/KEY: MOD\_RES  
169 <222> LOCATION: (22)  
170 <223> OTHER INFORMATION: Phe, Tyr or naphthylalanine  
172 <220> FEATURE:  
173 <221> NAME/KEY: MOD\_RES  
174 <222> LOCATION: (23)  
175 <223> OTHER INFORMATION: Ile, Val, Leu, pentylglycine, tert-butylglycine or Met  
177 <220> FEATURE:  
178 <221> NAME/KEY: MOD\_RES  
179 <222> LOCATION: (24)  
180 <223> OTHER INFORMATION: Ala, Glu or Asp  
182 <220> FEATURE:  
183 <221> NAME/KEY: MOD\_RES  
184 <222> LOCATION: (25)  
185 <223> OTHER INFORMATION: Ala, Trp, Phe, Tyr or naphthylalanine  
187 <220> FEATURE:  
188 <221> NAME/KEY: MOD\_RES  
189 <222> LOCATION: (26)

RAW SEQUENCE LISTING  
 PATENT APPLICATION: US/10/656,093

DATE: 09/16/2003  
 TIME: 10:48:00

Input Set : A:\256-152div.txt  
 Output Set: N:\CRF4\09162003\J656093.raw

190 <223> OTHER INFORMATION: Ala or Leu  
 192 <220> FEATURE:  
 193 <221> NAME/KEY: MOD\_RES  
 194 <222> LOCATION: (27)  
 195 <223> OTHER INFORMATION: Ala or Lys  
 197 <220> FEATURE:  
 198 <221> NAME/KEY: MOD\_RES  
 199 <222> LOCATION: (28)  
 200 <223> OTHER INFORMATION: Ala or Asn  
 202 <220> FEATURE:  
 203 <221> NAME/KEY: MOD\_RES  
 204 <222> LOCATION: (31)  
 205 <223> OTHER INFORMATION: Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine  
 206 N-alkylpentylglycine or N-alkylalanine  
 208 <220> FEATURE:  
 209 <221> NAME/KEY: MOD\_RES  
 210 <222> LOCATION: (36)..(38)  
 211 <223> OTHER INFORMATION: Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine  
 212 N-alkylpentylglycine or N-alkylalanine  
 214 <220> FEATURE:  
 215 <221> NAME/KEY: MOD\_RES  
 216 <222> LOCATION: (39)  
 217 <223> OTHER INFORMATION: Ser, Thr, Tyr, Pro, homoproline, 3Hyp, 4Hyp, thioproline,  
 218 N-alkylglycine, N-alkylpentylglycine or N-alkylalanine  
 220 <220> FEATURE:  
 221 <223> OTHER INFORMATION: provided no more than three of Xaa3, Xaa5, Xaa6, Xaa8,  
 222 Xaa10, Xaa11, Xaa12, Xaa13, Xaa14, Xaa15, Xaa16, Xaa17,  
 223 Xaa19, Xaa20, Xaa21, Xaa24, Xaa25, Xaa26, Xaa27 or Xaa28  
 224 are Ala; and the compound is not exendin-3 or exendin-4  
 226 <220> FEATURE:  
 227 <223> OTHER INFORMATION: this peptide may encompass 28-39 residues, wherein  
 228 residues 1-28 are constant and residues 29-39 may vary  
 229 in length according to the specification  
 231 <400> SEQUENCE: 4  
 W--> 232 Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 233 1 5 10 15  
 235 Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 236 20 25 30  
 238 Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 239 35  
 241 <210> SEQ ID NO: 5  
 242 <211> LENGTH: 30  
 243 <212> TYPE: PRT  
 244 <213> ORGANISM: Artificial Sequence  
 246 <220> FEATURE:  
 247 <223> OTHER INFORMATION: Description of Artificial Sequence: Exendin or  
 248 GLP-1 agonist  
 250 <220> FEATURE:  
 251 <223> OTHER INFORMATION: C-term may be amidated

Invalid  
 see item 5  
 on  
 error  
 summary  
 sheet.

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/656,093

DATE: 09/16/2003

TIME: 10:48:00

Input Set : A:\256-152div.txt

Output Set: N:\CRF4\09162003\J656093.raw

253 <400> SEQUENCE: 5  
254 His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
255 1 5 10 15  
257 Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly  
258 20 25 30  
261 <210> SEQ ID NO: 6  
262 <211> LENGTH: 28  
263 <212> TYPE: PRT  
264 <213> ORGANISM: Artificial Sequence  
266 <220> FEATURE:  
267 <223> OTHER INFORMATION: Description of Artificial Sequence: Exendin or  
268 GLP-1 agonist  
270 <220> FEATURE:  
271 <223> OTHER INFORMATION: C-term amidated  
273 <400> SEQUENCE: 6  
274 His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
275 1 5 10 15  
277 Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn  
278 20 25  
281 <210> SEQ ID NO: 7  
282 <211> LENGTH: 28  
283 <212> TYPE: PRT  
284 <213> ORGANISM: Artificial Sequence  
286 <220> FEATURE:  
287 <223> OTHER INFORMATION: Description of Artificial Sequence: Exendin or  
288 GLP-1 agonist  
290 <220> FEATURE:  
291 <223> OTHER INFORMATION: C-term amidated  
293 <400> SEQUENCE: 7  
294 His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
295 1 5 10 15  
297 Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
298 20 25  
301 <210> SEQ ID NO: 8  
302 <211> LENGTH: 28  
303 <212> TYPE: PRT  
304 <213> ORGANISM: Artificial Sequence  
306 <220> FEATURE:  
307 <223> OTHER INFORMATION: Description of Artificial Sequence: Exendin or  
308 GLP-1 agonist  
310 <220> FEATURE:  
311 <223> OTHER INFORMATION: C-term amidated  
313 <400> SEQUENCE: 8  
314 His Ala Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
315 1 5 10 15  
317 Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
318 20 25  
321 <210> SEQ ID NO: 9  
322 <211> LENGTH: 28

RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/10/656,093

DATE: 09/16/2003  
TIME: 10:48:01

Input Set : A:\256-152div.txt  
Output Set: N:\CRF4\09162003\J656093.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:4; Xaa Pos. 1,2,3,5,6,7,8,9,10,11,12,13,14,15,16,17,19,20,21,22,23,24  
Seq#:4; Xaa Pos. 25,26,27,28,29,30,31,32,33,34,35,36,37,38,39  
Seq#:47; Xaa Pos. 31,36,37,38  
Seq#:48; Xaa Pos. 36,37,38  
Seq#:49; Xaa Pos. 31  
Seq#:50; Xaa Pos. 31,36,37  
Seq#:51; Xaa Pos. 31,36,37  
Seq#:52; Xaa Pos. 31,36  
Seq#:55; Xaa Pos. 6  
Seq#:59; Xaa Pos. 10  
Seq#:60; Xaa Pos. 22  
Seq#:61; Xaa Pos. 23  
Seq#:65; Xaa Pos. 31,36,37  
Seq#:66; Xaa Pos. 19  
Seq#:67; Xaa Pos. 17  
Seq#:75; Xaa Pos. 29



## VERIFICATION SUMMARY

PATENT APPLICATION: US/10/656,093

DATE: 09/16/2003

TIME: 10:48:01

Input Set : A:\256-152div.txt

Output Set: N:\CRF4\09162003\J656093.raw

L:12 M:270 C: Current Application Number differs, Replaced Application Number  
L:13 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
L:232 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:0  
M:341 Repeated in SeqNo=4  
L:1131 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:47 after pos.:16  
M:341 Repeated in SeqNo=47  
L:1162 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:48 after pos.:32  
L:1187 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:49 after pos.:16  
L:1220 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:50 after pos.:16  
M:341 Repeated in SeqNo=50  
L:1253 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:51 after pos.:16  
M:341 Repeated in SeqNo=51  
L:1286 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:52 after pos.:16  
M:341 Repeated in SeqNo=52  
L:1354 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:55 after pos.:0  
L:1439 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:59 after pos.:0  
L:1467 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:60 after pos.:16  
L:1492 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:61 after pos.:16  
L:1585 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:65 after pos.:16  
M:341 Repeated in SeqNo=65  
L:1635 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:66 after pos.:16  
L:1642 M:220 C: Keyword misspelled or invalid format, <213> ORGANISM for SEQ ID#:67  
L:1673 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:67 after pos.:16  
L:1878 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:75 after pos.:16



256-152div corrected in response to notice to comply.txt  
SEQUENCE LISTING

<110> YOUNG, ANDREW A.  
VINE, WILL  
BEELEY, NIGEL R.A.  
PRICKETT, KATHRYN S.

<120> INOTROPIC AND DIURETIC EFFECTS OF GLP-1 AND GLP-1 AGONISTS

<130> 256-152DIV US

<140> 10/656,093

<141> 2003-09-05

<160> 75

<170> PatentIn Ver. 2.1

<210> 1

<211> 39

<212> PRT

<213> Heloderma horridum

<220>

<223> Exendin-3

<400> 1

His Ser Asp Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly Ala Pro Pro Pro Ser  
35

<210> 2

<211> 39

<212> PRT

<213> Heloderma suspectum

<220>

<223> Exendin-4

<400> 2

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly Ala Pro Pro Pro Ser  
35

<210> 3

<211> 30

256-152div corrected in response to notice to comply.txt

<212> PRT

<213> Homo sapiens

<220>

<223> GLP-1

<400> 3

His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly  
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg  
20 25 30

<210> 4

<211> 39

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
exendin agonist

<220>

<221> MOD\_RES

<222> (1)

<223> His, Arg or Tyr

<220>

<221> MOD\_RES

<222> (2)

<223> Ser, Gly, Ala or Thr

<220>

<221> MOD\_RES

<222> (3)

<223> Asp or Glu

<220>

<221> MOD\_RES

<222> (5)

<223> Ala or Thr

<220>

<221> MOD\_RES

<222> (6)

<223> Ala, Phe, Tyr or naphthylalanine

<220>

<221> MOD\_RES

<222> (7)

<223> Thr or Ser

<220>

<221> MOD\_RES

<222> (8)

<223> Ala, Ser or Thr

256-152div corrected in response to notice to comply.txt

<220>  
<221> MOD\_RES  
<222> (9)  
<223> Asp or Glu

<220>  
<221> MOD\_RES  
<222> (10)  
<223> Ala, Leu, Ile, Val, pentylglycine or Met

<220>  
<221> MOD\_RES  
<222> (11)  
<223> Ala or Ser

<220>  
<221> MOD\_RES  
<222> (12)  
<223> Ala or Lys

<220>  
<221> MOD\_RES  
<222> (13)  
<223> Ala or Gln

<220>  
<221> MOD\_RES  
<222> (14)  
<223> Ala, Leu, Ile, pentylglycine, Val or Met

<220>  
<221> MOD\_RES  
<222> (15)...(17)  
<223> Ala or Glu

<220>  
<221> MOD\_RES  
<222> (19)  
<223> Ala or Val

<220>  
<221> MOD\_RES  
<222> (20)  
<223> Ala or Arg

<220>  
<221> MOD\_RES  
<222> (21)  
<223> Ala or Leu

<220>  
<221> MOD\_RES  
<222> (22)  
<223> Phe, Tyr or naphthylalanine

<220>  
<221> MOD\_RES  
<222> (23)

256-152div corrected in response to notice to comply.txt

<223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

<220>

<221> MOD\_RES

<222> (24)

<223> Ala, Glu or Asp

<220>

<221> MOD\_RES

<222> (25)

<223> Ala, Trp, Phe, Tyr or naphthylalanine

<220>

<221> MOD\_RES

<222> (26)

<223> Ala or Leu

<220>

<221> MOD\_RES

<222> (27)

<223> Ala or Lys

<220>

<221> MOD\_RES

<222> (28)

<223> Ala or Asn

<220>

<221> MOD\_RES

<222> (31)

<223> Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine  
N-alkylpentylglycine or N-alkylalanine

<220>

<221> MOD\_RES

<222> (36)..(38)

<223> Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine  
N-alkylpentylglycine or N-alkylalanine

<220>

<221> MOD\_RES

<222> (39)

<223> Ser, Thr, Tyr, Pro, homoproline, 3Hyp, 4Hyp, thioproline,  
N-alkylglycine, N-alkylpentylglycine or N-alkylalanine

<220>

<223> provided no more than three of xaa5, xaa6, xaa8,  
xaa10, xaa11, xaa12, xaa13, xaa14, xaa15, xaa16, xaa17,  
xaa19, xaa20, xaa21, xaa24, xaa25, xaa26, xaa27 or xaa28  
are Ala; and the compound is not exendin-3 or exendin-4

<220>

<223> this peptide may encompass 28-39 residues, wherein  
residues 1-28 are constant and residues 29-39 may vary  
in length according to the specification

<400> 4

Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

256-152div corrected in response to notice to comply.txt

1 5 10 15

Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
20 25 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
35

<210> 5

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term may be amidated

<400> 5

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly  
20 25 30

<210> 6

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 6

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn  
20 25

<210> 7

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

256-152div corrected in response to notice to comply.txt

<223> C-term amidated

<400> 7

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 8

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 8

His Ala Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 9

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 9

His Gly Glu Gly Ala Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 10

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

256-152div corrected in response to notice to comply.txt

<220>

<223> C-term amidated

<400> 10

His Gly Glu Gly Thr Ala Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 11

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 11

His Gly Glu Gly Thr Phe Thr Ala Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 12

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 12

His Gly Glu Gly Thr Phe Thr Ser Asp Ala Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 13

<211> 28

<212> PRT

<213> Artificial Sequence

<220>



256-152div corrected in response to notice to comply.txt

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 13

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ala Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 14

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 14

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Ala Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 15

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 15

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Ala Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 16

<211> 28

<212> PRT

<213> Artificial Sequence

256-152div corrected in response to notice to comply.txt

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 16

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Ala Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 17

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 17

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Ala Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 18

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 18

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Ala  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 19

<211> 28

256-152div corrected in response to notice to comply.txt

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 19

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Ala Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 20

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 20

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Ala Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 21

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 21

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Ala Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

256-152div corrected in response to notice to comply.txt

<210> 22

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 22

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Ala Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 23

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 23

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Ala Phe Leu Lys Asn  
20 25

<210> 24

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 24

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Ala Leu Lys Asn  
20 25

256-152div corrected in response to notice to comply.txt

<210> 25  
<211> 28  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<223> C-term amidated

<400> 25  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Ala Lys Asn  
20 25

<210> 26  
<211> 28  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<223> C-term amidated

<400> 26  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Ala Asn  
20 25

<210> 27  
<211> 28  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<223> C-term amidated

<400> 27  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

256-152div corrected in response to notice to comply.txt  
Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Ala  
20 25

<210> 28  
<211> 38  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<223> C-term amidated

<400> 28  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly Ala Pro Pro Pro  
35

<210> 29  
<211> 38  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<223> C-term amidated

<400> 29  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly Ala Pro Pro Pro  
35

<210> 30  
<211> 37  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

256-152div corrected in response to notice to comply.txt

<400> 30

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly Ala Pro Pro  
35

<210> 31

<211> 37

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 31

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly Ala Pro Pro  
35

<210> 32

<211> 36

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 32

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly Ala Pro  
35

256-152div corrected in response to notice to comply.txt

<210> 33

<211> 36

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 33

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly Ala Pro  
35

<210> 34

<211> 35

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 34

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly Ala  
35

<210> 35

<211> 35

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated



256-152div corrected in response to notice to comply.txt

<400> 35

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly Ala  
35

<210> 36

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 36

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly

<210> 37

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 37

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly

<210> 38

256-152div corrected in response to notice to comply.txt

<211> 33

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 38

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser

<210> 39

<211> 33

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 39

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser

<210> 40

<211> 32

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 40

256-152div corrected in response to notice to comply.txt

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
20 25 30

<210> 41

<211> 32

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 41

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser  
20 25 30

<210> 42

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<400> 42

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro  
20 25 30

<210> 43

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 43

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu

256-152div corrected in response to notice to comply.txt

1                    5                    10                    15  
Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro  
                  20                    25                    30

<210> 44  
<211> 30  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<400> 44  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1                    5                    10                    15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly  
                  20                    25                    30

<210> 45  
<211> 29  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<400> 45  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1                    5                    10                    15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly  
                  20                    25

<210> 46  
<211> 29  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<223> C-term amidated

<400> 46  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1                    5                    10                    15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly  
                  20                    25

256-152div corrected in response to notice to comply.txt

<210> 47  
<211> 38  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<221> MOD\_RES  
<222> (31)  
<223> tPro

<220>  
<221> MOD\_RES  
<222> (36)..(38)  
<223> tPro

<220>  
<223> C-term amidated

<400> 47  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15  
Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Xaa Ser  
20 25 30  
Ser Gly Ala Xaa Xaa Xaa  
35

<210> 48  
<211> 38  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<221> MOD\_RES  
<222> (36)..(38)  
<223> tPro

<220>  
<223> C-term amidated

<400> 48  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15  
Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
20 25 30

256-152div corrected in response to notice to comply.txt

Ser Gly Ala Xaa Xaa Xaa  
35

<210> 49  
<211> 37  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<221> MOD\_RES  
<222> (31)  
<223> NMeala

<220>  
<223> C-term amidated

<400> 49  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Xaa Ser  
20 25 30

Ser Gly Ala Pro Pro  
35

<210> 50  
<211> 37  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<221> MOD\_RES  
<222> (31)  
<223> NMeala

<220>  
<221> MOD\_RES  
<222> (36)..(37)  
<223> NMeala

<220>  
<223> C-term amidated

<400> 50  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

256-152div corrected in response to notice to comply.txt

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Xaa Ser  
20 25 30

Ser Gly Ala Xaa Xaa  
35

<210> 51  
<211> 37  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<221> MOD\_RES  
<222> (31)  
<223> hPro

<220>  
<221> MOD\_RES  
<222> (36)..(37)  
<223> hPro

<220>  
<223> C-term amidated

<400> 51  
His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Xaa Ser  
20 25 30

Ser Gly Ala Xaa Xaa  
35

<210> 52  
<211> 36  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<221> MOD\_RES  
<222> (31)  
<223> hPro

<220>  
<221> MOD\_RES  
<222> (36)

256-152div corrected in response to notice to comply.txt

<223> hPro

<220>

<223> C-term amidated

<400> 52

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Xaa Ser  
20 25 30

Ser Gly Ala Xaa  
35

<210> 53

<211> 35

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 53

Arg Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly Ala  
35

<210> 54

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 54

His Gly Asp Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly  
20 25 30



256-152div corrected in response to notice to comply.txt

<210> 55  
<211> 28  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<221> MOD\_RES  
<222> (6)  
<223> Naphthylala

<220>  
<223> C-term amidated

<400> 55  
His Gly Glu Gly Thr Xaa Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 56  
<211> 28  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<223> C-term amidated

<400> 56  
His Gly Glu Gly Thr Phe Ser Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn  
20 25

<210> 57  
<211> 28  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>  
<223> C-term amidated

256-152div corrected in response to notice to comply.txt

<400> 57

His Gly Glu Gly Thr Phe Ser Thr Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn  
20 25

<210> 58

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 58

His Gly Glu Gly Thr Phe Thr Ser Glu Leu Ser Lys Gln Met Ala Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn  
20 25

<210> 59

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<221> MOD\_RES

<222> (10)

<223> pentylgly

<220>

<223> C-term amidated

<400> 59

His Gly Glu Gly Thr Phe Thr Ser Asp Xaa Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn  
20 25

<210> 60

<211> 28

<212> PRT

<213> Artificial Sequence

256-152div corrected in response to notice to comply.txt

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<221> MOD\_RES

<222> (22)

<223> Naphthylala

<220>

<223> C-term amidated

<400> 60

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Xaa Ile Glu Phe Leu Lys Asn  
20 25

<210> 61

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<221> MOD\_RES

<222> (23)

<223> tButylgly

<220>

<223> C-term amidated

<400> 61

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Xaa Glu Trp Leu Lys Asn  
20 25

<210> 62

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 62

256-152div corrected in response to notice to comply.txt

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Asp Phe Leu Lys Asn  
20 25

<210> 63

<211> 33

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 63

His Gly Glu Gly Thr Phe Thr Ser Asp Ala Ser Lys Gln Leu Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser

<210> 64

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

<220>

<223> C-term amidated

<400> 64

His Gly Glu Gly Thr Phe Thr Ser Asp Ala Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly  
20 25

<210> 65

<211> 37

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Exendin or  
GLP-1 agonist

256-152div corrected in response to notice to comply.txt

<220>  
<221> MOD\_RES  
<222> (31)  
<223> hPro

<220>  
<221> MOD\_RES  
<222> (36)..(37)  
<223> hPro

<220>  
<223> C-term amidated

<400> 65  
His Gly Glu Gly Thr Phe Thr Ser Asp Ala Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Xaa Ser  
20 25 30

Ser Gly Ala Xaa Xaa  
35

<210> 66  
<211> 29  
<212> PRT  
<213> artificial sequence

<220>  
<223> Agonist of GLP-1

<220>  
<221> MOD\_RES  
<222> (1)..(1)  
<223> Ala is modified with an R group which can be 4-imidazopropionyl  
(des-amino-histidyl), 4-imidazoacetyl, or 4-imidazo-a,  
adimethyl-acetyl

<220>  
<221> MOD\_RES  
<222> (19)..(19)  
<223> Xaa is a Lys or Arg

<220>  
<221> misc\_feature  
<222> (19)..(19)  
<223> Xaa can be any naturally occurring amino acid

<220>  
<221> MOD\_RES  
<222> (27)..(27)  
<223> Lys is modified with an R group consisting of C6 -C10 unbranched  
acyl, or is absent

<220>

256-152div corrected in response to notice to comply.txt

<221> MOD\_RES  
<222> (29)..(29)  
<223> Arg is modified with an R group consisting of Gly-OH or NH2  
  
<400> 66

Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln  
1 5 10 15

Ala Ala Xaa Glu Phe Ile Ala Trp Leu Val Lys Gly Arg  
20 25

<210> 67  
<211> 19  
<212> PRT  
<213> artificial sequence

<220>  
<221> MOD\_RES  
<222> (1)..(1)  
<223> Ser is modified by H2N, H2N-Ser, H2N-Val-Ser, H2N-Asp-Val-Ser. or  
any one of SEQ ID NO:68 to 74

<220>  
<221> MOD\_RES  
<222> (17)..(17)  
<223> Xaa is a Lys or Arg

<220>  
<221> misc\_feature  
<222> (17)..(17)  
<223> Xaa can be any naturally occurring amino acid

<220>  
<221> MOD\_RES  
<222> (19)..(19)  
<223> Arg can be modified by the group consisting of NH2, OH, Gly-NH2,  
or Gly-OH

<400> 67

Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val  
1 5 10 15

Xaa Gly Arg

<210> 68  
<211> 4  
<212> PRT  
<213> artificial sequence

<220>

256-152div corrected in response to notice to comply.txt

<223> variable sequence insert for artificial GLP-1 analog

<400> 68

Ser Asp Val Ser

1

<210> 69

<211> 5

<212> PRT

<213> artificial sequence

<220>

<223> variable sequence insert for artificial GLP-1 analog

<400> 69

Thr Ser Asp Val Ser

1

5

<210> 70

<211> 6

<212> PRT

<213> artificial sequence

<220>

<223> variable sequence insert for artificial GLP-1 analog

<400> 70

Phe Thr Ser Asp Val Ser

1

5

<210> 71

<211> 7

<212> PRT

<213> artificial sequence

<220>

<223> variable sequence insert for artificial GLP-1 analog

<400> 71

Thr Phe Thr Ser Asp Val Ser

1

5

<210> 72

<211> 8

<212> PRT

<213> artificial sequence

<220>

<223> variable sequence insert for artificial GLP-1 analog

256-152div corrected in response to notice to comply.txt

<400> 72

Gly Thr Phe Thr Ser Asp Val Ser  
1 5

<210> 73

<211> 9

<212> PRT

<213> artificial sequence

<220>

<223> variable sequence insert for artificial GLP-1 analog

<400> 73

Glu Gly Thr Phe Thr Ser Asp Val Ser  
1 5

<210> 74

<211> 10

<212> PRT

<213> artificial sequence

<220>

<223> variable sequence insert for artificial GLP-1 analog

<400> 74

Ala Glu Gly Thr Phe Thr Ser Asp Val Ser  
1 5 10

<210> 75

<211> 29

<212> PRT

<213> artificial sequence

<220>

<223> artificial

<220>

<221> MOD\_RES

<222> (1)..(1)

<223> neutral amino acid or D or N-acylated or alkylated form of histidine can be substituted for His

<220>

<221> MOD\_RES

<222> (2)..(2)

<223> small neutral amino acid can be substituted for Ala

<220>

<221> MOD\_RES

<222> (3)..(3)

<223> acidic or neutral amino acid can be substituted for Glu



256-152div corrected in response to notice to comply.txt

<220>  
<221> MOD\_RES  
<222> (4)..(4)  
<223> neutral amino acid can be substituted for Gly

<220>  
<221> MOD\_RES  
<222> (9)..(9)  
<223> acidic amino acid can be substituted for Asp

<220>  
<221> MOD\_RES  
<222> (10)..(10)  
<223> Tyr can be substituted for Val

<220>  
<221> MOD\_RES  
<222> (12)..(12)  
<223> Lys can be substituted for Ser

<220>  
<221> MOD\_RES  
<222> (15)..(15)  
<223> Asp can be substituted for Glu

<220>  
<221> MOD\_RES  
<222> (16)..(16)  
<223> Ser can be substituted for Gly

<220>  
<221> MOD\_RES  
<222> (17)..(17)  
<223> Arg can be substituted for Gln

<220>  
<221> MOD\_RES  
<222> (18)..(18)  
<223> Arg can be substituted for Ala

<220>  
<221> MOD\_RES  
<222> (20)..(20)  
<223> Lys can be substituted for a neutral amino acid, arg, or a D form of lys

<220>  
<221> MOD\_RES  
<222> (20)..(20)  
<223> Gln can be substituted for Lys

<220>  
<221> MOD\_RES  
<222> (25)..(25)  
<223> Trp can be substituted for an oxidation-resistant amino acid

<220>

256-152div corrected in response to notice to comply.txt

<221> MOD\_RES  
<222> (28)..(28)  
<223> Lys can be substituted for a neutral amino acid, arg, or a D form  
of lys

<220>  
<221> MOD\_RES  
<222> (29)..(29)  
<223> Xaa is a Gly, Gly-Arg, Gly-Arg-Gly, or absent

<220>  
<221> misc\_feature  
<222> (29)..(29)  
<223> Xaa can be any naturally occurring amino acid

<400> 75

His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly  
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Xaa  
20 25